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ABSTRACT

This document, one of 12 guides that have been developed to facilitate evaluation by and for local education agency (LEA) personnel in Illinois, covers cost and outcome analysis, a method of relating both monetary and nonmonetary returns to investments for the purpose of improving program planning and decision making. Throughout this activity, the term "benefits" connotes both educational performance and dollar outcomes. Both outcomes and costs are focused on in this activity so that costs are assessed in relation to benefits. The guide has been designed to aid the person who has responsibility for leading this particular activity. It includes three sections. The first section on preliminary considerations contains a brief explanation of this evaluation activity and the necessary steps to prepare for the evaluation undertaking. The second section of the guide is a procedure/ task breakdown, which outlines suggested tasks for conducting the evaluation activity. The third section of this guide contains supporting documents, including information handouts, example documents, and references. (KC)

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Cost-Outcome Analysis

Local Leader Guide X

CE 034979

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This Local Leader Guide is one of twelve guides that constitute the Locally-Directed Evaluation Handbook. These guides are designed to assist local education agency personnel in conducting internal or self evaluations.

Locally-Directed Evaluation Handbook

Second Edition

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Introduction

This is one of twelve guides that have been developed to facilitate evaluation by and for local education agency (LEA) personnel. This guide has been designed to aid the individual who has assumed responsibility for leading this particular activity. It includes three sections: 1) Preliminary Considerations; 2) Procedure/ Task Breakdown; and 3) Supporting Documents. All parts of this document are suggested, the local staff is encouraged to adapt or change any procedures and instruments to meet the needs of its agency.

The first section of this Local Leader Guide entitled "Preliminary Considerations" contains a brief explanation of this evaluation activity and the necessary steps to prepare for the evaluation undertaking. Suggestions are included for holding a staff meeting to discuss this activity.

The second section of this guide is the "Procedure/ Task Breakdown." This breakdown outlines suggested tasks for conducting this evaluation activity. The tasks have been followed in the field tests. However, these tasks are flexible and should be adapted in each LEA.

The third section of this guide contains "Supporting Documents." These documents include: 1) information handouts, 2) example documents, and 3) references. Information handouts contain valuable information which will assist in conducting this activity. Example documents are forms which can be utilized with this evaluation activity. References include bibliographies and sources of information for additional assistance. These supporting documents have been developed and used in other LEAs. However, they can be adapted and revised to fit your specific needs. The local leader may wish to duplicate and distribute these supporting documents and work on this activity.

The value of this evaluation effort is dependent upon a team effort in obtaining and utilizing results. By combining these results with those of other activities of an evaluation system, the improvement of educational programs and services can begin.

Preliminary Considerations

Cost/outcome analysis is an essential and important component of any evaluation system. It is a method of relating returns both monetary and nonmonetary to investments for the purpose of improving program planning and decision making. Throughout this activity the term benefits connotes both educational performance and dollar outcomes. Both outcomes and costs are focused on in this activity so that costs are assessed in relation to benefits. Your focus may be the entire LEA including administrative, attendance and health services, pupil transportation, and physical plant, or it might focus entirely on instructional programs, courses or lessons.

Instructional personnel are continually involved in making cost/outcome decisions. However, these decisions are generally of an informal nature. This activity helps you formalize your cost/outcome assessment. For example, the classroom instructor may decide that a film can replace a field trip when studying a specific process. If the student outcomes are the same, the lower cost of the film makes the choice more attractive to the instructor.

A second example is the case of high cost/low incidence programs. Local administrators often decide to utilize a cooperative education program in lieu of a laboratory program for instruction. In both of the above-mentioned cases, local personnel assess costs versus outcomes to arrive at decisions. However, without a formal evaluation, the cost component of such analysis may carry much more weight than the outcomes.

Cost/outcome analysis can be conducted at all educational levels. You will no doubt be interested in obtaining information that can assist in decisions at the course level. Types of delivery systems, instructional methodology, audiovisual media utilization, and equipment purchases are examples of areas where cost and outcome data can be of value to the classroom instructor. You and your staff must determine your informational needs.

One responsibility of the local leader is to conduct a general meeting with the staff. Instructors, administrators and guidance personnel should be present at this meeting. One very important outcome of the staff meeting should be a commitment on the part of personnel to participate in the cost/outcome evaluation activity. The local leader should become thoroughly familiar with the procedures and instruments in this guide.

Staff Meeting

1. Discuss the need to conduct a cost/outcome analysis. Some example purposes follow:
   a. To help make resource allocation decisions.
   b. To provide accountability indices.
   c. To determine the advisability of financing the development of a new program.
   d. To decrease the costs of a high cost/low incidence program.
   e. To provide assistance in choosing among instructional alternatives.
2. Discuss the types of cost information currently available in your LEA: for example, instructors' salaries, operational costs, school budget, etc.
3. Identify measures of benefit that currently exist. For example, consider other locally-directed evaluation activities, exam results, etc.
4. Discuss the specific nature of cost and outcome information needed.
5. Discuss the instructional level(s) of cost/outcome analysis reporting that is/are desirable in your agency.
6. Determine who should be involved in the data gathering process: for example, instructors, administrators, employers, advisory committee members, etc.
7. Determine which staff members are interested in working as team members. Formulate a list of volunteers.
8. Outline the tasks of the activity. Stress 3 major activities of (1) identifying costs, (2) identifying outcomes and (3) relating costs to outcomes.
   a. Task A. Establisn a Team to Plan and Coordinate the Activity.
   b. Task B. Determine the Scope for the Cost/Outcome Analysis Activity.
   c. Task C. Develop or Select a Cost Accounting Instrument.
   d. Task D. Collect Cost Data.
   e. Task E. Summarize Cost Data.
   f. Task F. Identify Existing Outcome Information.
   g. Task G. Collect and Summarize Outcome Information.
   h. Task H. Relate Cost Information to Outcome Information and Prepare a Written Report.
   i. Task I. Utilize Results of the Cost/Outcome Analysis.

Procedure/Task Breakdown

Task A. Establish a Team to Plan and Coordinate the Activity.

1. Be sure representatives from each area that will be affected by the assessment are included. For example, consider administrators, instructors, guidance personnel and advisory committee members.
2. Consider team member selection by referring to those who volunteered to participate at the staff meeting as well as other staff members with appropriate expertise. It may be advantageous to have at least one individual who has accounting experience and can help interpret budget records.

Task B. Determine the Scope for the Cost/Outcome Analysis Activity.

1. You might be interested in focusing your assessment on a number of programs, a single program, a department, a course, a unit of instruction or a specific lesson.
2. Consider available resources such as time, energy and money necessary to complete the assessment.
3. Develop one or more key questions. These key questions should reflect the decision making needs of the staff. The key questions should focus all efforts of the cost/outcome analysis. An example key question is: "Is the simulation aspect of the Health Care Aide program more efficient than the traditional approach?"

Task C. Develop or Select a Cost Accounting Instrument.

1. Identify the types of costs that you wish to collect. Table 1 contains example types or classifications of cost information. You should choose types that will be appropriate to the scope of your analysis.
2. Develop or select a form for tallying cost data. Example Document 10-1 is a sample that has been developed for course accounting data. The headings have been based on the information selected from the sample cost element matrix (Table 1).
   You may wish to change the column headings on Example Document 10-1 to include your choice of cost information or you may wish to design your own forms. Several specific factors should be kept in mind when designing forms.
   a. They should be simple and easy to complete.
   b. Plenty of space should be provided for cost data.
   c. Instruments should aim at specific personnel. For example, instructional cost forms should contain information to be completed by instructional personnel. If administrative costs are to be collected, they should be placed on a separate form.
3. Evaluate the form(s). Several members of the evaluation team should review the cost accounting instrument looking for elements that may have been omitted.
4. Revise the forms as needed.
5. Duplicate the forms.

Task D. Collect Cost Data.

1. Distribute forms to appropriate staff.
2. Orient staff to the use of the instrument (Example Document 10-1 or your new instrument).
   This can be accomplished by a cover letter or memorandum, an informal meeting or clearly stated directions included on the form. The specific nature of your LEA will help you decide on procedure.
   a. Ask instructors to inventory the equipment they use for each course.
   b. Ask them to estimate the current replacement cost for this equipment and enter in appropriate column of Example Document 10-1.
   c. If the same equipment is used for more than one course or course selection, ask instructors to note this fact on the form in the equipment cost column.
   d. Ask instructors to specify the dollar amount expended on supplies for each of their courses or course sections and enter it in column 7 of Example Document 10-1. If they only know a total without section or course breakdowns, ask them to note this on the form in the supply column.
   e. Ask instructors to specify book, media and travel costs in the appropriate columns of the form (Example Document 10-1).
3. Have staff return forms to the local leader.

Task E. Summarize Cost Data. (Complete Example Document 10-2.)

The team should summarize all cost data on one form for every course. This summary should include information from instructors as well as from existing records.

1. Forms for all instructors of the same course should be grouped.
2. Course title should be entered in column 1 of Example Document 10-2.
3. Enter course section number and instructor's name for each section in columns two and three respectively.
4. Enter total salary for each instructor in column 4. These amounts may be obtained from existing records.
5. Enter prorated salary for each section in Column 5. The amount can be obtained by dividing an individual's total salary (column 4) by the number of courses that represent a full load for your institution.
6. Insert equipment costs for each section in column 6. If equipment is used for only one section of one course, the amount entered in column 6 of Example Document 10-1 should be divided by ten and entered in column 6 of Example Document 10-2. However, if multiple sections exist and instructors haven't broken the equipment costs into sections, then equipment costs need to be divided by the number of sections taught. Then this amount should be divided by 10 (10

Table 1

Cost Element Matrix

			Institutional	Program	Course Cluster	Course
ADMINISTRATION	Superintendent's Office	Salaries	X			
	Administrative Council	Supplies	X	X		
	Public Relations	Clerical Assistance	X	X		
	Business Administration	Consultants	X			
	Fiscal Control	Other, i.e.,	X			
	Administration of Building and Grounds	Special Contracts Travel	X			
	Purchasing Office					
	Local Program Director					
	Department Chairman					
INSTRUCTION	Instructional Staff	Salaries; Travel; Clerical				X
	Textbooks	Net Profit or Cost of Books, Binding, etc.				X
	School Library and Audio-visual Materials	Library Books, Periodicals & Newspapers, Filmstrips & Recordings, Films, Radio-TV, Materials Costs & Rentals, Other (Paper, Pens)	X	X	X	X
	Teaching Supplies	Cost & Freight on: Tests, Chalk, Paper, Shop Supplies, etc.			X	X
	Other Expenses	Cost & Freight on: Office & Curriculum Supplies, Professional Books for Instructional Staff. Fees for speakers and Consultants	X	X	X	X
ATTENDANCE HEALTH SERVICES	Attendance Services	Salaries	X			
	Health Services	Supplies	X			
		Travel	X			
		Other	X			
PUPIL TRANSPORTATION SERVICES	School Financed Carriers		X	X		
	Contracted Services and Public Carriers		X	X		
	Replacement of Vehicles	Salaries	X	X		
	Pupil Transportation Insurance		X	X		
	Other Expenses for Operation and Maintenance		X	X		
PLANT	Operation	Salaries, Contracted Services for Operation of Plant, Heat for Bldg., Utilities (Except for Bldg.), Other	X	X	X	X
	Maintenance	Salaries, Contracted Services for Maintenance of Plant, Replacement of Equipment, other Expenses for Maintenance of Plant	X	X	X	X

Table 1 (continued)

FIXED CHARGES	Insurance and Judgments	Property Insurance Premiums	X	X		
		Employee Insurance Premiums	X	X		
		Liability Insurance Premiums	X	X		
FOOD SERVICE AND STUDENT ACTIVITIES	N.A.					
COMMUNITY SERVICES	Recreation	Salaries	X			
	Custodial and Detention Care of Children	Other Expenses: Travel	X			
	Welfare Act.	Supplies	X			
	Non-Public School Services		X			
CAPITAL OUTLAY	Sites	Professional Services (Drawings, Specification, etc., Purchase Costs, Improvements)	X	X		
	Buildings	Professional Services; Remodeling, New Bldg. and Bldg. Addition Costs	X	X	X	X
	Equipment	Equipment item is movable or fixed unit of furniture or furnishings, instrument, machine, apparatus, or set of articles meeting following conditions: 1. Retains original shape & appearance with use. 2. Nonexpendable—if damaged or some of its parts are lost or worn out, it is usually more feasible to repair rather than replace it. 3. Represents an investment of money which makes it feasible & advisable to capitalize item. 4. Does not lose identity through incorporation into a different or more complex unit or substance.	X	X	X	X
TRANSFER ACCOUNTS	Outgoing	Payments to Other Districts, & Out-of-State Districts for Tuition, Transportation, Misc.	X	X		
		Payments to Other-than Public Schools for Tuition to Private Nonsectarian School Tuition to Inds.	X	X		
	Incoming	Amounts Received from Other School Districts in & out of State for: Tuition, Transportation, Miscellaneous.	X	X	X	X

years average life of most equipment). This prorated amount should be entered in column 6 of Example Document 2 for each section. An example is shown below:

$$\frac{\text{Total Equipment Cost}}{\text{\# of Sections}} \text{ / 10 Years} = \text{Per Section Equipment Cost}$$

$$\frac{\$50{,}000}{5 \text{ Sections}} \text{ / 10 Years} = \$1{,}000 \text{ Per Section}$$

7. Per section supply costs should be entered in column 7 of Example Document 10-2. If instructors with multiple sections had supplies broken down for each section, then these amounts can be entered directly. However, if instructors noted on their form that all they had was total cost, the total should be divided by the number of sections taught.

$$\frac{\text{Total Supply Costs}}{\text{\# of Sections}} = \text{Per Section Supply Cost}$$

8. Media, travel and other costs should be entered in Example Document 10-2. Prorating may be necessary.
9. All costs for each section should be summed and entered in column 10. This represents total section costs.
10. Total section costs for all sections of a course should be summed and recorded in column 11 of Example Document 10-2. This amount represents the total course cost.
11. Enter the number of students enrolled in each section and indicate the course credit awarded for the course in columns 12 and 13 respectively.
12. Multiply the total number of students for the course by the number of credits awarded. Enter this figure in column 14 of Example Document 10-2. This equals the total student credit hours generated.
13. Divide the total course cost figure (column 11) by the number of credit hours generated (column 14) and enter the quotient in column 15. This is the cost per credit hour.

Task F. Identify Existing Outcome Information. (Complete Example Document 10-3.)

1. Ask each course instructor to list outcome information sources that are available for their courses for a specified period of time, e.g., two years. (You may use column 1 of Example Document 10-3.) They might include:
   a. Final examination scores
   b. Co-op supervisor ratings
   c. Course follow-up information
   d. Others
2. In the same column of Example Document 10-3, have instructors identify outcome information sources that other units or agencies may have. These might include:
   a. Certification exam scores
   b. Program follow-up data
   c. Employer survey data
   d. Advisory committee ratings
   e. Others
3. Then, instructors should specify the indices that are available for each outcome data source. This information should be listed in column 2 of Example Document 10-3. Two example sources with corresponding indices are presented below:
   a. Radiology technician certification examination
      1. Average composite score
      2. Average performance test score
      3. Average oral review score
      4. Average written score
   b. Student follow-up survey
      1. Average graduate salary
      2. Percent employed in related jobs
      3. Average promotion rate
4. You might find it necessary to initiate additional LDE or other data gathering activities to supplement your outcome information. You might consider:
   a. Student/Employer Follow-up Survey, Activity #2.
   b. Measuring Student Competencies, Activity #3.

Task G. Collect and Summarize Outcome Information. (Complete Example Document 10-4.)

1. Develop an outcome data form or adapt the one presented as Example Document 10-4.
   a. From Example Document 10-3, choose those indices of performance you wish to use.
   b. Place a descriptor for each chosen index in the column head of Example Document 10-4. Some descriptors (columns 4-10) are presented as examples.
2. Duplicate and distribute Example Document 10-4 or your new instrument to instructors.
3. Ask instructors to fill in course title, section number and instructor's name in columns 1, 2 and 3 respectively.
4. Ask instructors to average, for each section, the measures of student performance you have chosen and place these averages in columns 4 through 13.
5. Calculate course averages for each outcome index and enter it in each column with the row corresponding to the course title in column 1.

Task H. Relate Cost Information to Outcome Information and Prepare a Written Report.

It is seldom possible to relate costs to outcomes in a strict mathematical sense, resulting in some type of cost-benefit ratio. Instead, since most benefits or outcomes will be nonmonetary, the analysis can only relate, discuss, and include judgements about the apparent relationship.

1. Develop or adapt a cost/outcome comparison form. (See Example Document 10-5.)
2. List the course number and course title in columns 1 and 2 of Example Document 10-5, respectively.
3. Enter cost per credit hour from column 15 of Example Document 10-2 in column 3 of Example Document 5.
4. Summarize the most important outcomes from Example Document 4 and enter them in column 4 of Example Document 10-5.

5. Formulate conclusions about the cost/outcome relationships and enter them in Example Document 10-6. Conclusions are judgements about the relationship with regard to your original key questions. They can be either positive or negative.
   An example conclusion is:
   > Course cost comparisons showed that the simulation Health Care Aide section is more expensive than the traditional section. However, comparisons of graduates of the Health Care Aide course taught via simulation and traditional methods indicated that 13% more graduates of the simulation group were promoted within 5 years.
6. For each conclusion that identifies a relationship other than optimum, formulate a recommendation and enter it in column two of Example Document 10-6.
   An example recommendation which gives general direction for improvement is:
   > Based on high outcome data, simulation should be continued as a method of instruction in the Health Care Aide Course.
7. For each recommendation, formulate several suggested solutions and enter them in column 3 of Example Document 10-6. Suggested solutions are statements of action that might be taken to implement the recommendations and overcome the deficiency identified in the conclusion.
   Two example suggested solutions are:
   > Additional simulation activities should be considered in the Health Occupations area.
   >
   > Simulation activities should be considered for other occupational curricula.
8. Once the team has prepared this portion of the report, Example Documents 10-5 and 10-6 should be placed in a report that is prefaced with:
   a. A description of the purpose for the study
   b. A list of key questions
   c. A description of the procedures used, and
   d. A list of individuals involved in the evaluation.

Task I. Utilize Results of the Cost/Outcome Analysis.

1. Duplicate and distribute the report to all staff involved in the course and sections focused on the activity. Caution should be taken to ensure proper interpretation of the report. The data from Example Document 10-5 should not be considered alone. They must be viewed in light of conclusions and qualifying statements.
2. Ask the staff to review the findings (information from Example Document 10-5) and the narrative conclusions, recommendations and suggested solutions.
3. Ask for reactions to conclusions and encourage staff, either individually, or collectively, to suggest additional solutions. The more suggested solutions, the better.
4. The report should be used to answer the key questions posed in Task B and decisions and action should be initiated. Primary uses of the cost/outcome report are:
   a. To aid in choosing among alternatives
   b. To aid in improving the efficiency of offerings, and
   c. To provide accountability indices.
5. Conduct meetings with staff members involved with conducting this activity. This group should plan and monitor activities directed toward program improvement.

Example Documents

No.	Page Number
10-1. Instructor Cost Data Instrument	14
10-2. Cost Data Summary Form (For Team Use)	15
10-3. Outcome Source and Index Specification Form	16
10-4. Outcome Data Summary Form	17
10-5. Cost/Outcome Comparison Form	18
10-6. Cost/Outcome Summary Report	19

INSTRUCTOR COST DATA INSTRUMENT

GENERAL COURSE INFORMATION					COST INFORMATION							
1	2	3	4	5	6	7	8	9	10	11	12	13
COURSE NUMBER	COURSE TITLE	SECTION NUMBER	NUMBER OF CREDITS	NUMBER OF STUDENTS	EQUIP-MENT	SUPPLIES	BOOKS	MEDIA	TRAVEL			TOTAL

Example Document 10-1

Example Document 10-2

COST DATA SUMMARY FORM (FOR TEAM USE)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
COURSE TITLE	SECTION NUMBER	INSTRUC-TOR NAME	TOTAL SALARY	PRORATED SALARY	EQUIP-MENT	SUPPLIES	MEDIA	TRAVEL	SECTION TOTAL COST	COURSE TOTAL COST	NUMBER OF STUDENTS	COURSE CREDIT	CREDIT HOURS	COST PER CREDIT

Example Document 10-3

OUTCOME SOURCE AND INDEX SPECIFICATION FORM

OUTCOME INFORMATION SOURCE	OUTCOME INDICES

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Example Document 10-4

OUTCOME DATA SUMMARY FORM

1	2	3	4	5	6	7	8	9	10	11	12	13
COURSE TITLE	SECTION NUMBER	INSTRUCTOR	FINAL EXAM SCORE	NUMBER WORKING	NUMBER IN RELATED JOBS	# PASSING CERTIFICATION EXAM	EMPLOYER RATING OF BASIC SKILL	EMPLOYER RATING OF PROMPTNESS	EMPLOYER RATING OF INITIATIVE			

Example Document 10-5

COST/OUTCOME COMPARISON FORM

Key Question:

Course Number	Course Title	Cost Per Credit Hour	Outcome Information

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Example Document 10-6

COST/OUTCOME SUMMARY REPORT

Key Question:

CONCLUSIONS	RECOMMENDATIONS	SUGGESTED SOLUTIONS

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